VERIFICATION OF A TRANSLATION

I, the below named translator, hereby declare that:

My name and post office address are as stated below;

That I am knowledgeable in the English language and in the language in which the below identified Japanese application was filed, and that I believe the attached English translation of the Japanese Patent Application No. 2000-008358 filed on January 17, 2000 is a true and complete translation of the above-identified Japanese application as filed.

Date February 6, 2003

Full name of the translator Yoshiko Kita

Signature of the translator Yoshiko Kita

Post Office Address 6-25, Tezukayama-nishi 1-chome, Sumiyoshi-ku, Osaka-shi, Osaka, JAPAN

Filed on January 17, 2000: Reference No.PC-2000010: Patent Application No. 2000-008358

DOCUMENT NAME	Application for Patent
APPLICATN'S REFERENCE NUMBER	PC-2000010
FILING DATE	January 17, 2000
ADDRESS	Commissioner of the Patent Office
INTERNATIONAL PATENT CLASSIFICATION	A61H 7/00
NUMBER OF CLAIMS	4
INVENTOR	
ADDRESS OR RESIDENCE	c/o Family Kabushiki Kaisha, 17-26, Higashi-nakajima 1-chome, Higashi-yodogawa-ku, Osaka-shi, Osaka
NAME	Nichimu Inada
APPLICANT FOR PATENT	
IDENTIFICATION NUMBER	000112406
NAME	Family Kabushiki Kaisha
AGENT	
IDENTIFICATION NUMBER	100061745
PATENT ATTORNEY	
NAME	Toshio Yasuda
TELEPHONE NUMBER	06-6782-6917
IDENTIFICATION OF FEE	
DEPOSIT ACCOUNT NUMBER	001579
AMOUNT OF FEE	21000
LIST OF DOCUMENTS ATTACHED	

DOCUMENT NAME	Specification	1
DOCUMENT NAME	Drawings	1
DOCUMENT NAME	Abstract	1
NUMBER OF GENERAL POWER OF ATTORNEY		9608003
REQUEST OF PROOF	Yes	

[Document Name] Specification

[Title of the Invention] MASSAGING APPARATUS

[Claims]

1. A massaging apparatus comprising a main body (2) of the massaging apparatus, a therapeutic member (14) provided on the body (2)of the massaging apparatus so as to move along a user's body in the vertical direction for giving a massage to the user, and a position control element (49, 50) for positioning the therapeutic member (14) manually to arbitrary positions, characterized in that a memory (39)for storing a position of the therapeutic member (14) determined by a manual operation of the position control element (49, 50) as a reference position is provided.

2. A massaging apparatus comprising a main body (2) of the massaging apparatus, a positioning body (14) provided on the main body (2) of the massaging apparatus so as to move along a user's body in the vertical direction, and a position control element (49, 50) for manually positioning the positioning body (14) at arbitrary positions, characterized in that a memory (39) for storing a position of the positioning body (14) determined by a manual operation of the position control element (49, 50) as a reference position is provided.

3. A massaging apparatus comprising a positioning body (14) provided on a main body (2) of the massaging apparatus so as to move along a user's body in the vertical direction, of which

movement is controlled by instructions from a control unit (38), characterized in that a reference-position-determining control unit (53) for performing determination of a reference position for the positioning body (14) is provided, and the control unit (38) detects a position of the positioning body (14) at the moment when the reference- position-determining control element (53) is operated as a reference position.

4. A massaging apparatus as set forth in any one of Claims 1 to 3, characterized in that the reference position is a shoulder position.

[Detailed Descriptions of the Invention]

[Technical Field of the Invention]

The present invention relates to massaging apparatus capable of setting a position of a body such as a shoulder position.

[Prior Art]

In order to perform suitable massage according to a height of a user, various techniques to measure a shoulder position in advance for every user has been proposed.

For example, in a chair type massaging machine, a therapeutic member in a seatback portion is automatically moved downward from an upper potion to a lower portion, a load applied to the therapeutic member when the therapeutic member comes into contact with a shoulder is detected, and the position where the load is detected is regarded as the shoulder position

(related art 1).

Alternatively, there is a simple massaging apparatus in which a user selects a shoulder position that is suitable to the user manually from among several candidates for the shoulder position provided in advance instead of automatically detecting the shoulder position (related art 2)

[Problems to be Solved by the Invention]

The related art 1 seems to be convenient since the shoulder position can easily be obtained. However, there is an actual problem in that the shoulder position cannot be detected accurately.

In other words, when the user slouches, his/her shoulders are away from the seatback and thus even when the therapeutic member moves down to the shoulder position, it does not contact the shoulder. In this case, the position where the therapeutic member contacts the body is significantly lower than the actual position of the shoulder, and such lower position may be detected as the shoulder position by mistake.

The probability that the user is in the slouched posture is especially high at the time of detection of the shoulder position. Because the detection of the shoulder position has to be performed before massaging motion, it is to be performed immediately after the user sits on the massaging apparatus. It is rare that the user is seated as deep as the shoulder of the user comes into contact with the seatback of the seat at

the moment immediately after seating, but it is normal that he/she is sitting on the front portion of the seat surface in a slouched posture.

At the moment immediately after seating, the user is holding a remote controller or operating a controller provided on an armrest for operating the massaging apparatus, and thus the user's line of sight is directed in the downward direction, and thus he/she is apt to take a slouched posture.

As described thus far, in the related art 1, since the shoulder position is detected automatically, the user is not much aware of the fact that the detection of the shoulder position is being performed. Therefore, it is almost impossible to expect the user always takes a proper posture so that the shoulder position is accurately detected, whereby the accurate detection of the shoulder position cannot be made after all.

On the other hand, the related art 2 does not have problems as in the related art 1, since the user takes an active part in the setting of the shoulder position by selecting a candidate for the shoulder position that matches with the position of his/her shoulder by manual operation.

However, a method of selecting a shoulder position from among several preset candidates for the shoulder position have a problem in that there is not necessarily a candidate for the shoulder position that exactly matches with the position of

the user's shoulders, and in this case, the user is obliged to select a candidate that is in the closest position to his/her actual shoulder position, and thus the accurate shoulder position cannot be obtained.

[Means for Solving the Problems]

With these problems in view, the present invention employs the following technical means in order to set the position of the shoulder more accurately.

In other words, the present invention provides a massaging apparatus comprising a body of the massaging apparatus, a therapeutic member provided on the body of the massaging apparatus so as to move along the user's body in the vertical direction, and a position control element for positioning the therapeutic member manually to arbitrary positions for giving a massage to the user, and is characterized in that there is provided a memory for storing a position of the therapeutic member determined by a manual operation of the position control element as a reference position (for example, a shoulder position).

In this arrangement, since the user can place the therapeutic member at the arbitrary places by manually operating the position control element, by positioning the therapeutic member at his/her shoulder position for example, that position is stored in the memory as a shoulder position. At this time, by positioning accurately by manual operation,

the shoulder position can be set accurately.

The present invention can be applied not only to the setting of "the shoulder position", but also to the setting of other portions of the body. For example, by operating the apparatus to set the hip position as a reference position for giving a massage accurately to the area around the hip, or by operating the apparatus to set both of the shoulder position and the hip position as reference positions, the shape of the body can be determined more accurately, thereby realizing more suitable massage.

It is not necessary that the entire movement of the therapeutic member be performed by manual operation. For example, it is also possible to employ the construction in which, after an automatic shoulder position detecting means moves the therapeutic member automatically to the position that seems to be the shoulder position as in the case of related art 1, the user move the therapeutic member to the accurate shoulder position manually and set that position as a reference position. In this case, since it is not necessary to perform the entire movement manually, the operation is simplified.

Another aspect of the invention is a massaging apparatus comprising a body of the massaging apparatus, a positioning body provided on the body of the massaging apparatus so as to move along a user's body in the vertical direction, and a position control element for manually positioning the

positioning body at arbitrary positions, characterized in that a memory for storing a position of the positioning body determined by a manual operation of the position control element as a reference position is provided.

It purports that a positioning body for determining the reference position is preferably a therapeutic member for performing massage, but a separate positioning body for positioning other than the therapeutic member may be provided.

Another aspect of the present invention is a massaging apparatus comprising a positioning body provided on a main body of the massaging apparatus so as to move along a user's body in the vertical direction, of which the movement is controlled by instructions from a control unit, characterized in that a reference-position-determining control element for performing determination of the reference position for the positioning body is provided, and the control unit detects a position of the positioning body at the moment when the reference-position-determining control element is operated as a reference position.

In this case, when the movable positioning body is situated at a certain position, the control unit detects the position thereof as a reference position by operating the reference-position-determining control element. When the reference position is a shoulder position for example, by operating the determining control element at the moment when

the therapeutic member is at the shoulder position, that position is detected as the shoulder position, so that the control unit can perform massage based on information of the shoulder position.

Though the reference-position-determining control element can be a special switch only for determining a reference position, it is also possible to share with the switch having other functions such as a massage start switch. When shared with the massage start switch, by operating the start switch, the reference position is detected and stored in the memory, and massaging motion starts.

In addition, the position control element or the reference-position-determining control element does not have to be a switch that physically exist, and it may be, for example, a switch that is operated by touching a panel according to instructions shown on a touch-screen display.

In order to store the reference position into the memory, for example, a certain period of time for setting the shoulder position may be set in advance, so that the positioning body is moved within the preset time period and the position of the positioning body at the moment when the preset time has elapsed is stored automatically in the memory as a reference position. In this case, operation of the reference-position-determining switch is not necessary.

[Mode for Carrying Out the Invention]

Hereinafter, an embodiment of the present invention will now be described referring to figures. Fig. 1 shows an appearance of a massaging apparatus 1 according to the present invention, which includes a main body 2 of a massaging apparatus of a chair type.

The main body 2 of the massaging apparatus comprises a seatback portion 3, a seat portion 4, and a foot resting portion (footrest) 5. The seatback portion 3 can be reclined manually or automatically by a reclining mechanism, not shown. The footrest 5 is connected to the seat portion 4 so as to be pivotable about a lateral axis, and upwardly movable by a footrest hoisting mechanism, not shown.

In the seatback portion 3, there is provided a massaging motion unit 7 that can move in the vertical direction (in the direction of the height of the user) along the seatback portion 3. The massaging motion unit 7 is moved vertically in the seatback portion 3 by means of a locomotive drive 8 and can stop at arbitrary positions in a range from the neck to the hip.

The locomotive drive 8 mainly comprises a screw locomotive mechanism and a hoist motor 9. The screw locomotive mechanism is constructed in such a manner that a nut portion 11 provided on the rear side of the motion unit 7 is threadingly engaged with a screw shaft 10 extending vertically in the seatback portion 3. The hoist motor 9 is arranged at a lower

end of the screw shaft, and the rotation of the hoist motor 9 rotates the screw shaft 10, thereby moving the motion unit 7 upward and downward. The left and the right sides of the motion unit 7 are guided by a hoist rail, not shown.

The motion unit 7 comprises a massage drive motor 13, a therapeutic member 14, and a massaging mechanism 15 for converting the rotation of the motor 13 into a massaging motion of the therapeutic member 14. The massaging mechanism 15 in this embodiment generates a rapping motion and a kneading motion.

The therapeutic members 14 are provided as a pair of upper and lower therapeutic members arranged on the left side and the right side respectively, that is, four pieces in total. The pair of upper and lower therapeutic members 14, 14 are held at both ends of a boomerang shaped supporting arm 16 respectively, and the vertical midpoint (bent point) of the supporting arm 16 is pivotally held about a lateral shaft 16a. Since the shaft 16a constitutes a part of the massaging mechanism 15, and the supporting arm 16 is mounted eccentrically and angularly displaced with respect to the shaft 16a, rotation of the shaft 16a generates a kneading motion of the therapeutic member 14.

The rapping motion is generated by the supporting arm 1 moved forward and rearward about the shaft 16a by a mechanism, which is not shown in the figure.

The seat portion 4 and the footrest 5 are provided with air cells 17, 18, 20-31 as therapeutic members for performing massaging motion. These air cells are inflated and deflated by supplying and discharging air, and inflation thereof gives a pressure massage to the body. Air is supplied to the air cells by an air pump arranged under the seat portion 4, and the air supply/discharge is controlled by switching a solenoid valve provided between each of the air cells and the air pump.

The air cell provided in the seat portion 4 is intended to give a massage to a region of the body from hip to thigh, and in this embodiment, there are provided two air cells; a first air cell 17 provided on the rear side of the seat portion 4 and a second air cell 18 provided on the front side thereof.

The air cells provided in the footrest 5 are intended to give a massage to the range from the calves to the ankles, and in this embodiment, twelve air cells 20-31 are provided on the bottom surface and both side walls of two grooves 33 for accommodating the left and the right legs respectively.

As shown in Fig. 2, control of the hoist motor 9, the massage drive motor 13, and an air circuit C is performed by an instruction from a control unit 38 constructed of a micro computer or the like. The positional control of the drive unit 7 (therapeutic member 14) is performed by detecting the number of revolution of the motor 9 with a rotation detector such as a pulse encoder or the like provided on the hoist motor 9, and

recognizing the position of the drive unit 7 from the amount of movement per revolution.

The control unit 38 is provided with a memory 39 for performing a process required for the setting of the shoulder position described later. In addition, the control unit 38 receives required instructions from the operating unit 40 shown in Fig. 3 as well.

The operating unit 40 is provided with a cover 41 to be opened and closed on the operating surface. In a state in which the cover 41 is opened as shown in Fig. 3(a), various manual operations according to the preference of the user can be performed, and in a state in which the cover 41 is closed as shown in Fig. 3(b), one of a plurality of automatic therapeutic courses can be selected. Hereinafter, the state in which the cover 41 is closed will be mainly described.

The lower half portion of the surface of the cover 41 is provided with a course selecting element 42, and the upper half portion thereof is provided with a transparent cover 43 so as to see the display panel 44 therethrough. In the course selecting element 42, 6 patterns of standard courses can be selected as an execution pattern of the automatic therapy course only with the number keys from 1 to 6 arranged in circle and additional 6 patterns of short course can be selected by operating the short mode key disposed in the center of the number keys in combination with the respective number keys.

The each course will now be described. The course 1, for example, is the fatigue-recovering course, in which a massage at a normal pressure is given in the order of Kenchu-yu, Shin-yu, and Hai-yu, and then to Jin-yu at a gentle pressure. The course 2 is the gastrointestinal condition improvement course; the course 3 is the aperient course; the course 4 is the hepatic disorder remedy course; the course 5 is the lumber pain remedy course; and the course 6 is the neuralgia remedy course, and in each course, the pressure points according to the therapeutic purpose are massaged with a prescribed massaging touch.

On the other hand, the display panel 44 includes a course display field 45 for displaying that the automatic therapy course is selected or which course is selected, a position display field 46 for displaying the current position of the therapeutic member 14 with a light emitting point, an elapsed time display field 47 for displaying the remaining operation time, a strength display field 48 for displaying a massaging force between strong and gentle, and the like.

When the cover 41 of the operating unit 40 is opened, the course display field 45 is turned off, the display of "manual course" is illuminated instead. In the portion hidden behind the cover 41 (the part corresponding to the course selecting element 42), an elevation switch 49 and a lowering switch 50 are provided. The elevation switch 49 and the

lowering switch 50 are the position control element for the therapeutic member 14 and serve to actuate the locomotive drive 8 as long as they are being pressed, and thus the therapeutic member 14 can be moved to an arbitrary extent.

In the upper portion of the cover 41 of the control unit 40 there are provided a power switch 52 and a shoulder position determining switch 53 as the reference position determination section.

In order to determine the shoulder position and perform a massaging operation with such a massaging apparatus 1, the following steps are to be carried out. Since the massaging apparatus 1 is constructed in such a manner that when the operation to turn the power OFF is carried out, the therapeutic member 14 is returned to the uppermost position (point of origin) of its range of movement before the power is turned OFF, when the power is turned ON, the therapeutic member 14 is at the uppermost position of its range of movement. From this state, the lowering switch 50, which is the position control element, is pressed to lower the therapeutic member 14 (See Fig. 4). Then the hoisting switch 49 and the lowering switch 50 are operated as appropriate to bring the upper therapeutic member 14 to the position where it abuts the shoulder (step S1).

After completion of positioning of the therapeutic member 14, when the shoulder position determining switch 43

is pressed (step S2), the position of the therapeutic member 14 (position of the motion unit 7) is detected as a distance A from the seat portion 4, and stored in the memory as information about the shoulder position (step S3). With these steps, the shoulder position setting operation reaches completion.

By performing the shoulder position setting operation before operating the course selecting element 42 to perform the automatic therapy course, accurate positions of the pressure points to be massaged in the therapeutic course based on the preset shoulder position can be obtained for performing adequate therapy.

The pressure points to be massaged are determined in the following manner.

Though the distribution of the pressure points varies from individual to individual depending on the figure, the positions of the pressure points in the upper half of the body can be determined with reference to the positions of the thoracic vertebrae, lumbar vertebrae, and sacral vertebrae even when the physique is different. Therefore, if the positions of the thoracic vertebrae, lumbar vertebrae, and sacral vertebrae are obtained, the positions of the pressure points can be obtained accurately. The position of the thoracic vertebrae, lumbar vertebrae, and sacral vertebrae of the user can be obtained by determining the shoulder position.

In other words, as shown in Fig. 6, along the columna vertebralis of the human body, twelve thoracic vertebrae, five lumber vertebrae, and four sacral vertebrae are aligned generally at regular intervals, and the preset shoulder position is located at the upper end of the first thoracic vertebra T1. The shoulder position can be obtained as the distance A from the seat portion 4 to the shoulder position of the user.

A distance D from the seat portion 4 to the lower end of the fifth lumber vertebra L5 in a state in which the user is seated on the main body 2 of the massaging apparatus is constant irrespective of the figure of the user such as the difference of the height of the user, and is considered to be about 15 cm. Therefore, the twelve thoracic vertebrae and five lumber vertebrae are aligned at regular intervals over a distance B from the shoulder position to the fifth lumber vertebra L5 (= distance [A-D]).

Therefore, if the distance A is known as the shoulder position, the vertical length ΔB of one piece of the user's thoracic vertebra, lumber vertebra L5, or sacral vertebra can be obtained by first subtracting the distance D (15 cm) from the distance A to obtain the distance B, and then calculating $[B \div (12+5) = \Delta B]$.

The positions of the respective pressure points (Kenchu-yu to Jiryo) of the upper half of the body, for example,

the position of Hai-yu is in the vicinity of the fourth thoracic vertebra T4, and thus the position of Hai-yu can be calculated from the shoulder position and ΔB.

The control unit 40 moves the massaging motion unit 7 upward and downward based on the calculated value, and the therapeutic member 14 is positioned to the pressure points to perform a massaging motion.

Another example to obtain the position of the pressure points when the shoulder position is known is disclosed in Japanese Patent Laid-Open No. HEI 10-243982. The shoulder position can be used not only for obtaining the positions of the pressure points, but also for controlling the therapeutic member 14, for example, so as not to move above the preset position of the shoulder because a massaging motion does not have to be made for the portion above the shoulder position. In addition, information about the shoulder position can be used for various controls as needed.

The present invention is not limited to this embodiment. For example, the main body of the massaging apparatus is not limited to the chair type, but rather be applicable to the mat or the bed type.

[Effect of the Invention]

According to the present invention, a reference position such as a shoulder position can be set accurately, whereby more adequate massaging motion can be performed.

[Brief Description of the Drawings]

Fig. 1 is a perspective view of a massaging apparatus according to the present invention.

Fig. 2 is a control block diagram of the massaging apparatus.

Fig. 3 is an operating unit, wherein (a) shows a state in which a cover is opened, and (b) shows a state in which the cover is closed.

Fig. 4 is a schematic drawing showing the positioning of the therapeutic member to the shoulder.

Fig. 5 is a flow chart showing the procedure for setting the shoulder position.

Fig. 6 is a back view of the trunk showing thoracic vertebrae, lumbar vertebrae, and sacral vertebrae of columna vertebralis and the pressure points.

[Description of the Reference Numerals]

1	massaging apparatus
2	main body of the massaging apparatus
7	massaging motion unit
8	locomotive drive
9	hoist motor
14	therapeutic member (positioning body)
38	control unit
39	memory
40	operating unit

49 hoisting switch (position control element)

50 lowering switch (position control element)

52 shoulder position determining switch (reference-position-determining control element)

FIG. 1

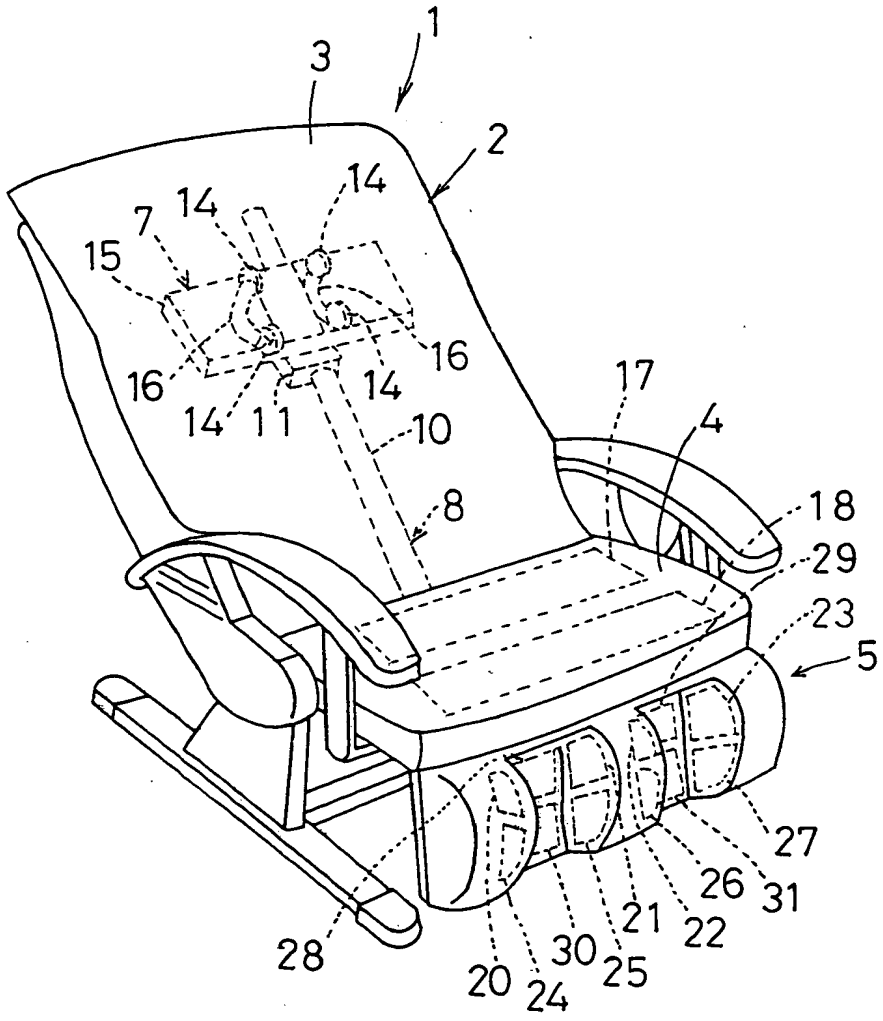


FIG. 2

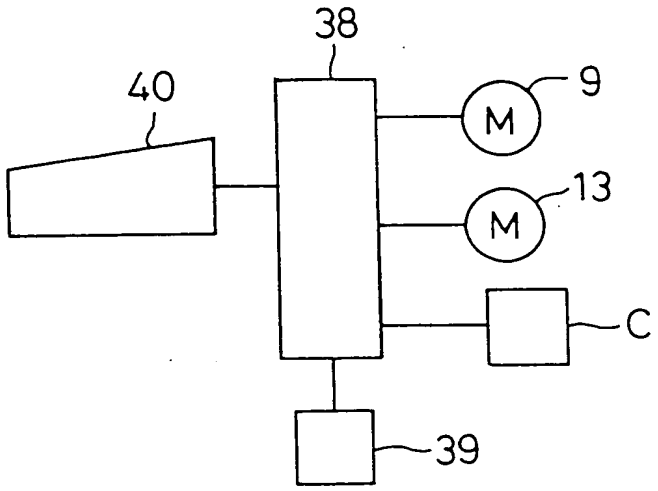


FIG. 3

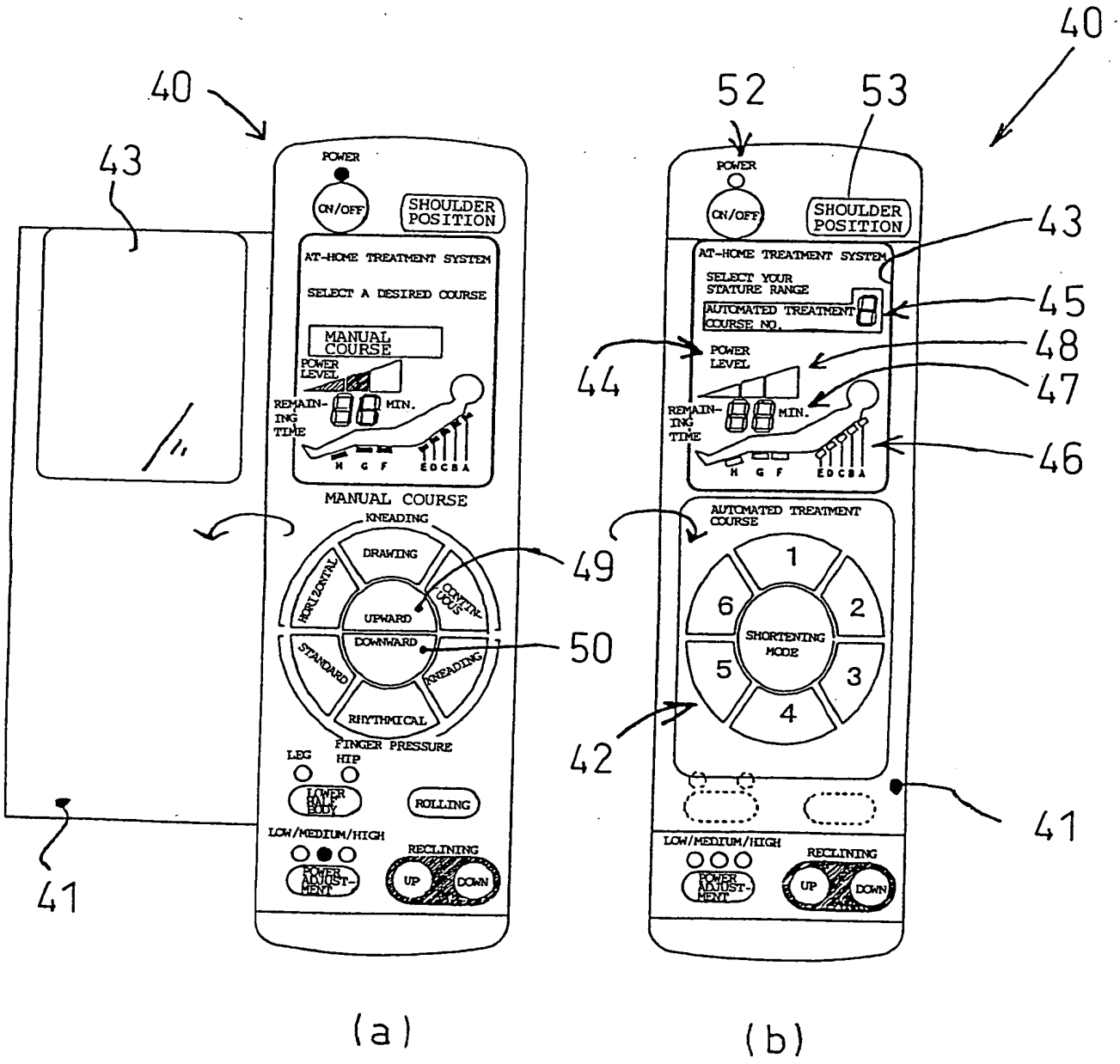


FIG. 4

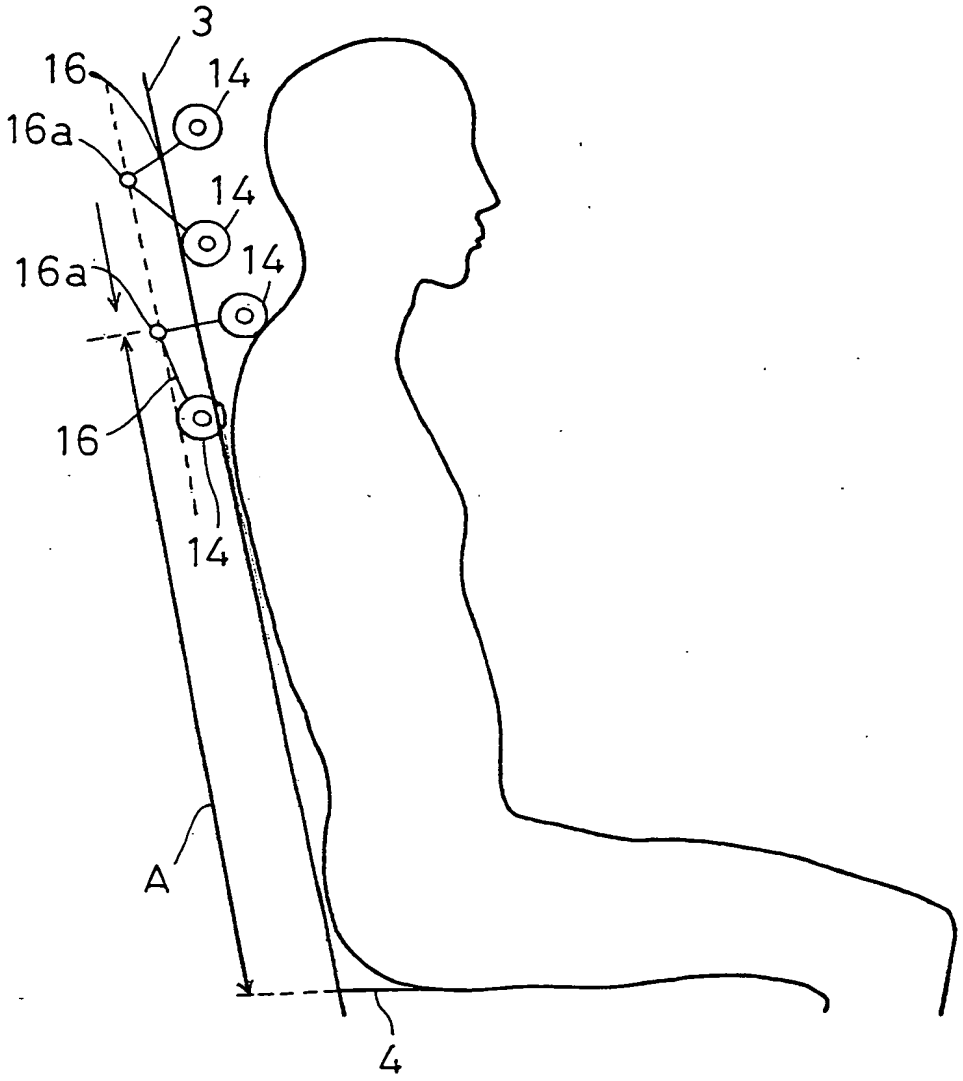


FIG.5

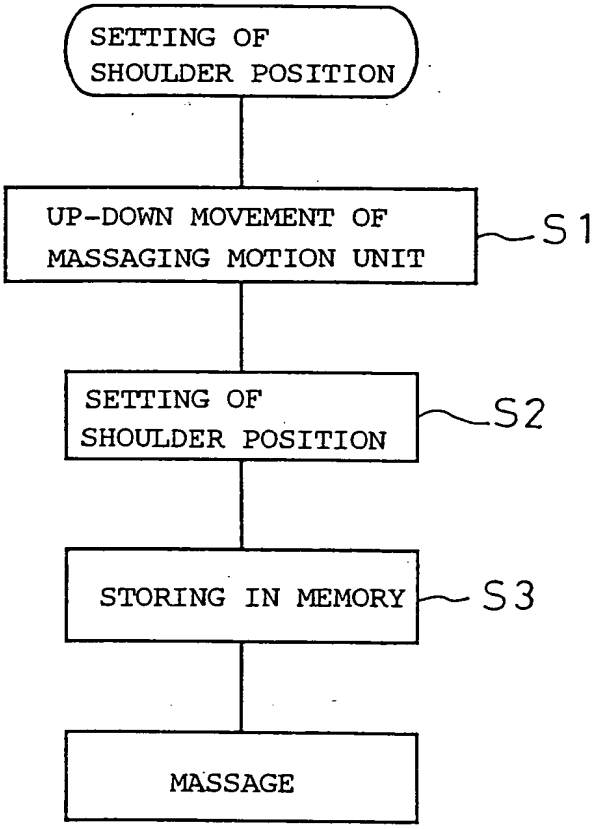
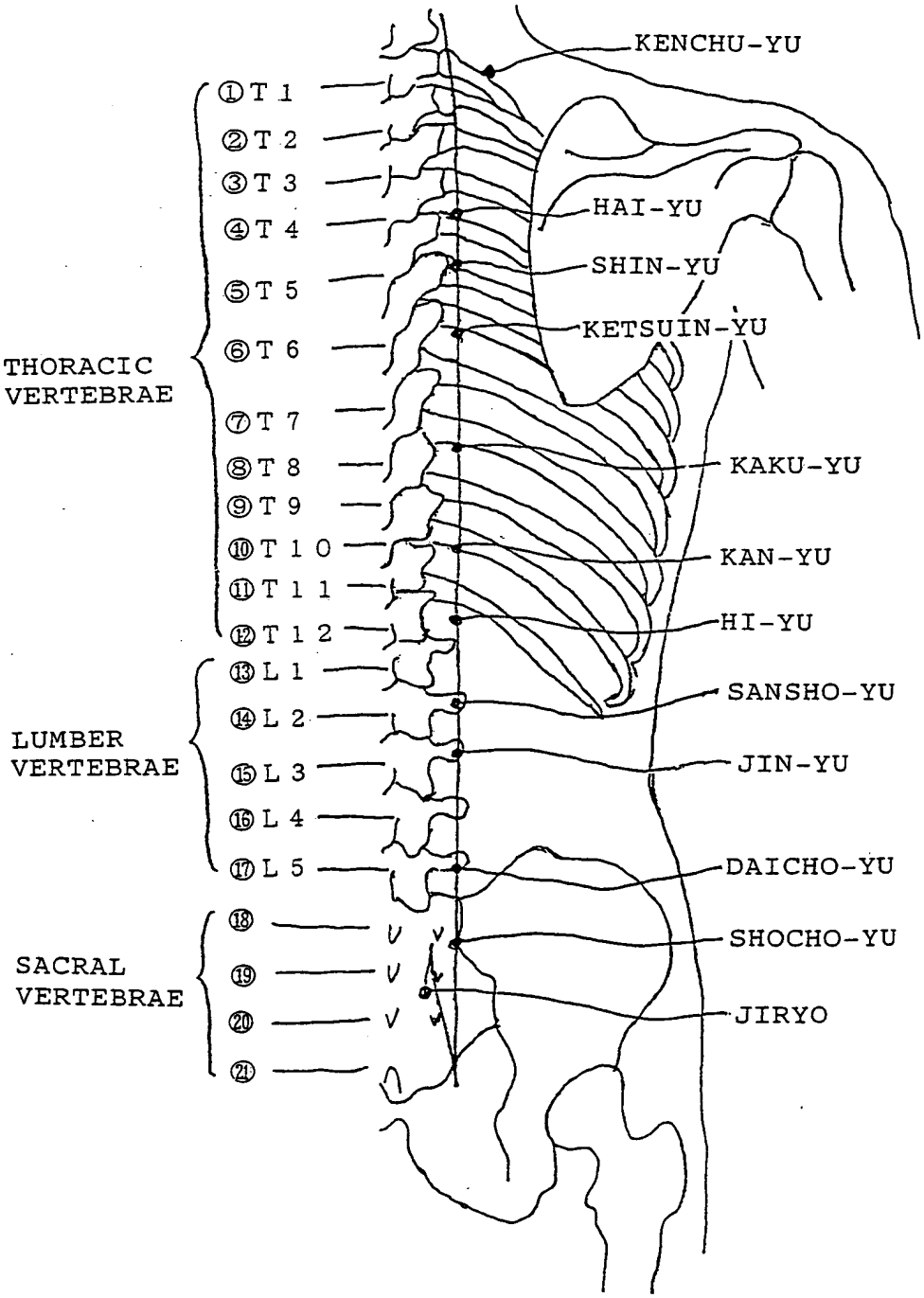


FIG. 6



[Document Name] Abstract of the Disclosure

[Abstract]

[Object]

To provide massaging apparatus capable of accurately setting a shoulder position of a user.

[Means for Solving]

A massaging apparatus having a main body of the massaging apparatus, a therapeutic member provided on the body of the massaging apparatus so as to move along a user's body in the vertical direction, and a position control element for positioning the therapeutic member manually to arbitrary positions further includes a memory for storing a position of the therapeutic member determined by a manual operation of the position control element as a reference position (for example, a shoulder position).

[Selected Drawing] Fig. 5